

Listing of Claims:

1. (Currently Amended) A microdissection apparatus to obtain a necessary area from a sample, comprising:

a laser light source to emit laser light; and

a laser light irradiation optical system to irradiate the sample with the laser light from the laser light source; [[,]]

wherein the laser light irradiation optical system ~~including~~ comprises an active optical element [[,]] which ~~is allowed to form~~ forms thereon a pattern ~~reflecting~~ corresponding to the necessary area, and the laser light irradiation optical system ~~setting~~ sets a laser light irradiation area, ~~to~~ in which the laser light is applied on the sample, ~~based on~~ via the pattern formed on the active optical element.

2. (Original) The microdissection apparatus according to claim 1, further comprising a pattern image projection optical system, which projects an image of the pattern formed on the active optical element onto the sample.

3. (Original) The microdissection apparatus according to claim 2, further comprising an observation optical system, which acquires an observation image of the sample.

4. (Currently Amended) The microdissection apparatus according to claim 3, further comprising a display unit to display the observation image acquired by the observation optical system, and an input unit to input information for setting the pattern formed on the active optical element.

5. (Currently Amended) The microdissection apparatus according to claim 3, further comprising a control unit to set the pattern formed on the active optical element based on the observation image acquired by the observation optical system.

6. (Currently Amended) The microdissection apparatus according to claim 1, wherein the laser light irradiation optical system selectively irradiates ~~the~~ a part of the sample that surrounds the necessary area with the laser light in accordance with the pattern formed on the active optical element, and the laser light applied to the sample has an energy density sufficient for evaporating the sample, ~~and~~ such that the part of the sample irradiated with the laser light is evaporated so ~~that~~ as to cut the necessary area ~~is cut~~ from the sample.

7. (Currently Amended) The microdissection apparatus according to claim 1, wherein the laser light irradiation optical system ~~includes~~ further comprises an objective lens arranged

close to the sample, a relay lens ~~to be appropriately arranged on~~
5 which is removably inserted into an optical path between the
active optical element and the objective lens, and a relay lens
~~attachment/detachment~~ insertion/removal mechanism to
~~attach/detach~~ insert and remove the relay lens ~~to/from~~ into and
from the optical path; [[,]]

10 ~~in a state that~~ wherein when the relay lens is ~~positioned on~~
inserted in the optical path, the active optical element forms
the pattern ~~reflecting~~ corresponding to the necessary area, and
the laser light irradiation optical system selectively irradiates
a part of the sample excluding the necessary area with the laser
15 light in accordance with the pattern formed on the active optical
element; [[,]] and

~~in a state that~~ wherein when the relay lens is ~~off~~ removed
from the optical path, the laser light irradiation optical system
converges ~~the~~ a beam of laser light by the objective lens to
20 irradiate the sample with the converged beam.

8. (Currently Amended) The microdissection apparatus
according to claim 7, wherein, ~~in the state that~~ when the relay
lens is ~~off~~ removed from the optical path, the converged beam of
laser light ~~, which is converged by the objective lens to~~
5 ~~illuminate the sample,~~ has an energy density sufficient for
evaporating the sample.

9. (Currently Amended) The microdissection apparatus according to claim 8, further comprising a movement mechanism, which relatively moves the sample and a beam spot of the converged beam of laser light formed on the sample; ~~and the~~
5 ~~sample,~~

wherein the beam spot of the laser light is relatively moved on the sample by the movement mechanism ~~to surround~~ completely
around an area to be collected including the necessary area, and a part of the sample irradiated with the converged beam of laser
10 light is evaporated to be cut, ~~so~~ such that the area to be collected including the necessary area is cut from the sample.

10. (Original) The microdissection apparatus according to claim 1, wherein the active optical element comprises a transmission type active optical element.

11. (Original) The microdissection apparatus according to claim 1, wherein the active optical element comprises a reflection type active optical element.

12. (Currently Amended) A microdissection apparatus to obtain a necessary area from a sample, comprising:

a light source means for emitting laser light; and

a laser light irradiation optical system to irradiate the
5 sample with the laser light from the light source means; [[,]]

wherein the laser light irradiation optical system ~~including~~
comprises pattern forming means for forming a pattern ~~reflecting~~
corresponding to the necessary area, and the laser light
irradiation optical system ~~setting~~ sets a laser light irradiation
10 area, ~~to~~ in which the laser light is applied on the sample, ~~based~~
~~on~~ via the pattern formed by the pattern forming means.

13. (Original) The microdissection apparatus according to
claim 12, further comprising a pattern image projection optical
system for projecting an image of the pattern formed by the
pattern forming means onto the sample.

14. (Original) The microdissection apparatus according to
claim 13, further comprising an observation optical system for
acquiring an observation image of the sample.

15. (Original) The microdissection apparatus according to
claim 14, further comprising displaying means for displaying the
observation image acquired by the observation optical system, and
inputting means for inputting information for setting the pattern
formed by the pattern forming means.

16. (Currently Amended) The microdissection apparatus according to claim 14, further comprising a controller for setting the pattern formed by the pattern forming means based on the observation image acquired by the observation optical system.

17. (Currently Amended) The microdissection apparatus according to claim 12, wherein the laser light irradiation optical system selectively irradiates ~~the~~ a part of the sample that surrounds the necessary area with the laser light in accordance with the pattern formed by the pattern forming means, and the laser light applied to the sample has an energy density sufficient for evaporating the sample, and such that the part of the sample irradiated with the laser light is evaporated so ~~that~~ as to cut the necessary area is cut from the sample.

18. (Currently Amended) The microdissection apparatus according to claim 1, wherein the laser light irradiation optical system ~~includes~~ further comprises an objective lens arranged close to the sample, a relay lens, which is ~~appropriately~~ removably inserted into an optical path between the pattern forming means and the objective lens, and a relay lens ~~attachment/detachment~~ insertion/removal mechanism, which ~~attaches/detaches~~ inserts and removes the relay lens ~~to/from~~ into and from the optical path; [[,]]

10 ~~in a state that~~ wherein when the relay lens is ~~positioned on~~
 inserted in the optical path, the pattern forming means forms the
 pattern ~~reflecting~~ corresponding to the necessary area, and the
 laser light irradiation optical system selectively irradiates a
 part of the sample excluding the necessary area with the laser
15 light in accordance with the pattern formed on the pattern
 forming means; [[,]] and

~~in a state that~~ wherein when the relay lens is ~~off~~ removed
 from the optical path, the laser light irradiation optical system
 converges ~~the~~ a beam of laser light by the objective lens to
20 irradiate the sample with the converged beam.

 19. (Currently Amended) The microdissection apparatus
 according to claim 18, wherein, ~~in the state that~~ when the relay
 lens is ~~off~~ removed from the optical path, the converged beam of
 laser light ~~, which is converged by the objective lens to~~
5 ~~illuminate the sample,~~ has an energy density sufficient for
 evaporating the sample.

 20. (Currently Amended) The microdissection apparatus
 according to claim 19, further comprising moving means for
 relatively moving the sample and a beam spot of the converged
 beam of laser light formed on the sample; ~~and the sample,~~

5 wherein the beam spot of the laser light is relatively moved
on the sample by the moving means ~~to surround~~ completely around
an area to be collected including the necessary area, and a part
of the sample irradiated with the converged beam of laser light
is evaporated to be cut, ~~so~~ such that the area to be collected
10 including the necessary area is cut from the sample.

21. (Original) The microdissection apparatus according to
claim 12, wherein the pattern forming means comprises a
transmission type active optical element.

22. (Original) The microdissection apparatus according to
claim 12, wherein the pattern forming means comprises a
reflection type active optical element.

23. (Currently Amended) A microdissection method for
obtaining a necessary area from a sample, comprising:

irradiating the sample with laser light through an active
optical element, which ~~is allowed to form~~ forms thereon a pattern
~~reflecting~~ corresponding to the necessary area.

24. (Currently Amended) The microdissection method
according to claim 23, wherein a part of the sample which
surrounds the necessary area is selectively irradiated with the

laser light in accordance with the pattern formed on the active
5 optical element and ~~it~~ is evaporated, thereby cutting the
necessary area from the sample.

25. (Currently Amended) The microdissection method
according to claim 24, ~~wherein~~ further comprising:

projecting an image of the pattern formed on the active
optical element ~~is projected~~ onto the sample; [[,]]

5 obtaining an observation image of the sample; ~~is obtained,~~
and

~~a~~ setting the pattern formed on the active optical element
~~is set~~ based on the obtained observation image.

26. (Currently Amended) The microdissection apparatus
according to claim 23, wherein a part of the sample excluding the
necessary area is selectively irradiated with the laser light in
accordance with the pattern formed on the active optical element,
5 and the selective irradiation of the laser light is repeatedly
performed while changing positions on the sample that are
irradiated to irradiate all desired positions on the sample;
~~according to needs,~~ and

wherein the method further comprises converging a beam of
10 the irradiated laser light onto a beam spot ~~of the laser light~~
~~formed~~ on the sample; and is

15 relatively ~~moved on~~ moving the beam spot of the converged
beam of laser light with respect to the sample while converging a
~~beam of laser light and irradiating the sample with the converged~~
~~beam to surround the~~ completely around an area to be collected
including the necessary area; ~~the~~

wherein a part of the sample irradiated with the converged
beam of laser light is evaporated, and such that the area to be
collected including the necessary area is cut from the sample.

27. (New) The microdissection apparatus according to
claim 1, further comprising an observation optical system, which
acquires an observation image of the sample.

28. (New) The microdissection apparatus according to
claim 27, wherein the observation optical system comprises an
erecting microscope.

29. (New) The microdissection apparatus according to
claim 27, wherein the observation optical system comprises an
inverted microscope.

30. (New) The microdissection apparatus according to
claim 3, wherein the laser light irradiation optical system and
the observation optical system have an objective lens in common.

31. (New) The microdissection apparatus according to claim 27, wherein the laser light irradiation optical system and the observation optical system have an objective lens in common.

32. (New) The microdissection apparatus according to claim 3, wherein the observation optical system comprises an erecting microscope.

33. (New) The microdissection apparatus according to claim 3, wherein the observation optical system comprises an inverted microscope.

34. (New) The microdissection apparatus according to claim 10, wherein the transmission type active optical element comprises a liquid crystal substrate.

35. (New) The microdissection apparatus according to claim 11, wherein the reflection type active optical element comprises a micro mirror array.

36. (New) The microdissection apparatus according to claim 1, wherein the laser light irradiation optical system selectively irradiates a part of the sample that surrounds the necessary area with the laser light in accordance with the

5 pattern formed on the active optical element, the laser light
applied to the sample is relatively moved on the sample by a
movement mechanism completely around an area to be collected
including the necessary area, and a part of the sample irradiated
with the converged beam of laser light is evaporated to be cut,
10 such that the area to be collected including the necessary area
is cut from the sample.